

Comments and Responses on SOCCR/SAP 2.2 Draft 1 (May 2006)
CHAPTER 2

COMMENT FROM PEER REVIEWERS						AUTHOR'S RESPONSE						
Comment Number	Reviewer ID	Chapter	Page	Line	Comment Text	Acknowledged, but no further response or revisions are required	Revisions have been incorporated as suggested in the comment	Agree, but see "Notes on Response"	Agree, but elaboration is precluded by length limitations	Disagree; see "Notes on Response"	Beyond scope of report/chapter	Notes on Response
02-001	3	2	2-2	12, 15-16	48% of the total amount of carbon released to the atmosphere from fossil fuel burning (300 ± 30 Gt, from the first paragraph on page 2-4) and forest clearing (160 ± 160 Gt, also from the first paragraph on page 2-4), or 220 Gt C by my calculation, is said to still reside in the atmosphere, in agreement with the missing carbon estimate of 240 Gt given on line 15. However, these values do not agree the missing carbon estimate of 218 Gt obtained from data given in the first paragraph on page 2-7 (sum of 118 Gt taken up by the oceans plus 100 Gt stored on the land) or with either of the other estimates of the remainder of the human contribution to the atmosphere: 180 ± 5 Gt C given on line 34 of page 2-6 and 161 Gt C (given as Pg C) in Fig. 2-1. NOTE: Oceanic share of missing carbon appears to be 110 Gt C per Fig. 2-1 (as opposed to 118 Gt C given in text on page 2-2) but the terrestrial component is not decipherable without a more descriptive figure legend.		X					All number updated to present a consistent picture.
02-002	3	2	2-2	12, 15-16	In addition, if the uncertainty in the inputs to the atmosphere from fossil-fuel use and forest clearing amount to 460 ± 160 -190 Gt C, the uncertainty in the amount of the release remaining in the atmosphere cannot be 5% of the estimated release as stated in line 12 on this page.		X					Good point, bounds increased to reflect uncertainty of land use flux
02-003	3	2	2-3	13	Because respiration and fires are combined in the flux back to the atmosphere in Fig. 2-1, I think this sentence could be revised as follows: replace text after "reproduction," in line 12 with "in combination with wildfires return a slightly smaller amount to the atmosphere, with the difference stored as plant biomass and soil organic carbon."			X				The existing text more accurately partitions the processes into biologically meaningful components.
02-004	3	2	2-4	3	Per Fig. 1 in the overview to Part II of the report and the text in Chapter 1, the industrial revolution <i>began</i> in the 18th century and <i>expanded</i> in the 19th century, accelerating the releases from fossil fuels.		X					Dropped the date from the sentence.
02-005	3	2	2-4	6-7	How can references published in 1984 and 1999 give estimates of atmospheric releases through the year 2004?		X					references corrected to show web updates.
02-006	3	2	2-4	11	How can we say we know the concentration of atmospheric CQ in 1850 to three significant figures? What is the reference for this value and what is its estimated uncertainty?		X					reference added
02-007	3	2	2-4	13	I think you need to either drop the third significant figure in the estimate given or add a second significant figure to the error term.	X						This is largely philosophical. We are presenting the mean and the uncertainty.
02-008	3	2	2-4	20	I recommend deleting the parenthetical expression because the term described is never used elsewhere in text, tables, or figures.		X					
02-009	3	2	2-4	12-34 et seq	Since this same material is covered in more depth in Chapter 3 and the figure is repeated as Fig. 3-2, why not delete Fig. 2-3, keep only the most important parts of the text, and reference Chapter 3 for the details?	X						whole sentence deleted
02-010	3	2	2-6	2	How can ^{14}C be considered a passive tracer?		X					meaning of a passive tracer clarified in the text.
02-011	3	2	2-6	33	The error in the estimated release cannot be ± 100 Gt C if the errors on the two components (± 30 Gt C and ± 160 Gt C, respectively) given in the first paragraph on page 2-4 are correct.		X					all numbers and errors adjusted

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02-012	3	2	2-6	34 et seq	See comment # 02-001		X					all numbers and errors adjusted
02-013	3	2	2-11	9-22	Although I liked the tone of this paragraph, I found myself asking whether it was needed here since it deals with matters covered in more detail in Chapter 4. Another option might be to move it to the Executive Summary.		X					most of the paragraph dropped
02-014	3	2	2-19	Table 2-1	Why are there no error estimates for the values given in the table?	X						table dropped
02-015	3	2	2-20	Fig 2-1	The figure is too complex for a general audience without an extensive amount of additional explanation and the caption is obviously inadequate even for a technical audience. Incorporate into a text box to deal with this? In addition, the sizes of the reservoirs/pools and exchanges do not match those in Fig. 1-1. Which year(s) does this set of values represent? What is the reference for this figure?		X					legend expanded and reference added
02-016	3	2	2-21	Fig 2-2	The figure caption or a label on the lower panel should indicate that the data in the lower panel represent annual averages.		X					ok
02-017	3	2	2-23	Fig 2-4	The figure caption needs more explanation to be more comprehensible to some members of a general audience. I think it should say explicitly that negative values indicate regions that are CO2 sinks (as in Table 3-1 and Figure 15-3). In addition, the figure legends do not indicate the units of measure (Gt C per year?).		X					ok
02-018	3	2	2-24	Fig 2-5	The patterns shown in panel (a) of the figure suggest that North America, rather than representing a net sink for CO ₂ , was neutral on average with respect to exchanges with the atmosphere during the full period from 1988 to about 2003. The data in the figure are compatible with the idea expressed on page 2-7 in the text that North America represented a net sink during the 1990s, but the pattern after 1995 indicates that North America was, on balance, a very strong source of CO ₂ . In order to avoid confusion by the reader—and potential criticism from some corners about the interpretation of these data—would it not be advisable to discuss the implications of the patterns represented by the data <i>in toto</i> . (perhaps in a text box accompanying the figure), rather than focusing solely on the 1990s (as in the text on page 2-7)? Another option might be to provide a brief summary of the causes and implications of the variations in this chapter with a reference to more detailed discussion in another chapter in the report.		X					ok
02-019	3	2	2-24	Fig 2-5	The figure caption probably should indicate that data for ocean basins are represented by "heavy" dashed lines and it should say explicitly that negative values indicate when the oceans/continents are CO ₂ sinks (as in Table 3-1 and Figure 15-3).		X					ok
02-020	4	2	2-3	28	"Future increases in carbon uptake in this portion of the carbon cycle could"	X						what does this comment mean

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02-021	4	2	2-3	10	Why specify such a large range (100-200) for the land exchange? This is particularly noticeable in relation to the rather specific amount noted for the oceans (92 +/- 5). Though less certain, isn't there a more specific, citeable amount for annual gross exchange?		X					the incorrect values were inserted after the paper was submitted.
02-022	4	2	2-3	20	The transfer to the oceans is by rivers? Perhaps write, "....to the oceans by rivers and released from"		X					ok
02-023	4	2	2-4	22-23	Perhaps the use of "rich" could be misunderstood? It may be better to use "industrialized" countries? That may be the point here – that among the industrial countries there are varying amounts of efficiency in generating wealth.			X				sentence dropped
02-024	4	2	2-5	1	Perhaps the use of "rich" could be misunderstood? It may be better to use "industrialized" countries? That may be the point here – that among the industrial countries there are varying amounts of efficiency in generating wealth.					X		modern literature tends to prefer rich to industrialized, especially since the rich countries are mostly de-industrializing.
02-025	4	2	2-5	22	Perhaps, ".....spatial scaling presents formidable challenges due to heterogeneity of the landscape" this provides a bit more explanation to the reader as to the limitation of the eddy flux method in this context.		X					ok
02-026	4	2	2-6	14	The inverse method relies on both the space and time patterns of CO2 concentrations rather than just space (though for the calculation of the long-term means, it is primarily using space patterns). Perhaps use "spatiotemporal pattern" in this sentence?		X					ok
02-027	4	2	2-6	15-16	It may be important to mention that the flask observing network has stations that go back to roughly 1980 (calibrated) and that many of the 100 mentioned were added in the last decade. This has meant that the calculation of long-term means and inverse estimated flux time series use far less than the 100 currently available stations.		X					ok
02-028	4	2	2-6	21-22	The sources of uncertainty for the inverse method could be listed a bit better perhaps. "Limitations in the accuracy of atmospheric inversions come from the limited density of concentration measurements, especially in the tropics, the uncertainty of observations, transport uncertainty, mismatches between the resolution of observations versus simulations, and varying a priori assumptions in the inverse process."			X				this list is more detailed than the one in the text, but the one in the text is more understandable
02-029	4	2	2-7	2	This leaves 100 Gt? My subtraction suggests 160 Gt C.		X					all numbers reconciled
02-030	9	2	2-1	13-15	Page ES-4, lines 24-27, state "The global terrestrial sink is quite uncertain. . Thus, North America is probably responsible for at least half of the global terrestrial sink, but could account for as little as a quarter to nearly all of it." In chapter 2, "Key Findings" (p. 2-1, lines 13-15), there is a nearly identical statement that begins with the word "[g]lobal" – which should also begin the above statement – and ends with the date of "1850." It seems likely that "1750," or the beginning of the Industrial Revolution, is the appropriate date in both places.		X					used dates only when they relate to specific studies

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02-031	9	2	2-4		The report appears to compare "per capita emissions" of North America with those of China and India. Per capita emissions comparisons tend to be misleading given the differences in population between North America and China and India. The EIA's June 2006 report, "International Energy Outlook: 2006," (pp. 72-73) views emissions in terms of economic growth (see the reviewer's lengthy detailed comments in the file containing comments on Chapter 6).					X		it seems reasonable to report both total and per capita numbers
02-032	9	2	2-7		Carbon intensity – this Administration's metric – and economic growth (highlighted in the EIA passage above) are more realistic and meaningful measures for purposes of comparison. In addition, CO2 emissions in China and India have already been forecast to surpass those in the U.S. by 2009. See EIA's "International Energy Annual 2002" and "International Energy Outlook: 2005."					X		all discussion of energy intensity shifted to chapter 3